

Appl. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

Amendments to Claims:

This listing of claims will replace all prior versions and listings of claims in the instant application:

Listing of Claims:

Claims 1-15 canceled.

(Note: claims 13-15 are shown for the convenience of the Examiner so that the Examiner can be assured that correct claim dependencies have been maintained for claims 16-22)

13. (Canceled) An apparatus for recognizing speech from texts comprising disfluency words and non-disfluency words, said apparatus comprising:

a first judging processor, wherein said first judging processor judges whether words inputted as an object of recognition are non-disfluency words;

a second judging processor, wherein said second judging processor judges whether said inputted words constituting a condition necessary for recognizing said inputted words consist of only non-disfluency words, if said inputted words have been judged to be non-disfluency words by said first judging processor; and

a first probability calculator, wherein said first probability calculator calculates a probability, if said conditional words have been judged as containing non-disfluency words and disfluency words by said second judging processor, by using a dictionary containing a first language model which has been trained regarding disfluency words and non-disfluency words, and a second language model which has been trained regarding non-disfluency words and trained to ignore disfluency words so as to recognize words showing the highest probability of representing said inputted words.

14. (Canceled) The apparatus for speech recognition according to claim 13, further comprising:

Appln. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

a second probability calculator, wherein said second probability calculator calculates said probability based on said first language model, if said object words have been judged as not being non-disfluency words by said first judging processor.

15. (Canceled) The apparatus for speech recognition according to claim 13, further comprising:

a third probability calculator, wherein said third probability calculator calculates probability based on said second language model, if said conditional words have been judged as containing only non-disfluency words by said second judging processor.

16. (Currently Amended) ~~The apparatus for speech recognition according to claim 14, further comprising:~~

An apparatus for recognizing speech from texts comprising disfluency words and non-disfluency words, said apparatus comprising:

a first judging processor, wherein said first judging processor judges whether words inputted as an object of recognition are non-disfluency words;

a second judging processor, wherein said second judging processor judges whether said inputted words constituting a condition necessary for recognizing said inputted words consist of only non-disfluency words, if said inputted words have been judged to be non-disfluency words by said first judging processor;

a first probability calculator, wherein said first probability calculator calculates a probability, if said conditional words have been judged as containing non-disfluency words and disfluency words by said second judging processor, by using a dictionary containing a first language model which has been trained regarding disfluency words and non-disfluency words, and a second language model which has been trained regarding non-disfluency words and trained to ignore disfluency words so as to recognize words showing the highest probability of representing said inputted words;

Appl. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

a second probability calculator, wherein said second probability calculator calculates said probability based on said first language model, if said object words have been judged as not being non-disfluency words by said first judging processor; and

a third probability calculator, wherein said third probability calculator calculates said probability based on said second language model, if said conditional words have been judged as containing only non-disfluency words by said second judging processor.

17. (Currently Amended) ~~The apparatus for speech recognition according to claim 13, said first probability calculator further comprising:~~

An apparatus for recognizing speech from texts comprising disfluency words and non-disfluency words, said apparatus comprising:

a first judging processor, wherein said first judging processor judges whether words inputted as an object of recognition are non-disfluency words;

a second judging processor, wherein said second judging processor judges whether said inputted words constituting a condition necessary for recognizing said inputted words consist of only non-disfluency words, if said inputted words have been judged to be non-disfluency words by said first judging processor;

a first probability calculator, wherein said first probability calculator calculates a probability, if said conditional words have been judged as containing non-disfluency words and disfluency words by said second judging processor, by using a dictionary containing a first language model which has been trained regarding disfluency words and non-disfluency words, and a second language model which has been trained regarding non-disfluency words and trained to ignore disfluency words so as to recognize words showing the highest probability of representing said inputted words;

a third judging processor, wherein said third judging processor judges whether a word immediately preceding said object word is a disfluency word; and

a fourth probability calculator, wherein said fourth probability calculator calculates said probability based on said first and said second language models, if said preceding word has been judged a disfluency word by said third judging processor.

Appln. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

18. (Currently Amended) The apparatus for speech recognition according to claim 14
17, said first probability calculator further comprising:

a second probability calculator, wherein said second probability calculator calculates said probability based on said first language model, if said object words have been judged as not being non-disfluency words by said first judging processor.

~~a third judging processor, wherein said third judging processor judges whether a word immediately preceding said object word is a disfluency word; and~~

~~a fourth probability calculator, wherein said probability calculator calculates said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word by said third judging processor.~~

19. (Currently Amended) The apparatus for speech recognition according to claim 15
18, ~~said first probability calculator~~ further comprising:

a third probability calculator, wherein said third probability calculator calculates probability based on said second language model, if said conditional words have been judged as containing only non-disfluency words by said second judging processor.

~~a third judging processor, wherein said third judging processor judges whether a word immediately preceding said object word is a disfluency word; and~~

~~a fourth probability calculator, wherein said probability calculator calculates said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word by said third judging processor.~~

20. (Original) The apparatus for speech recognition according to claim 17, further comprising a fifth probability calculator, wherein said fifth probability calculator calculates said probability based on said second language model, if said preceding word has been judged as not being a disfluency word by said third judging processor.

Appln. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

21. (Original) The apparatus for speech recognition according to claim 18, further comprising a fifth probability calculator, wherein said fifth probability calculator calculates said probability based on said second language model, if said preceding word has been judged as not being a disfluency word by said third judging processor.

22. (Original) The apparatus for speech recognition according to claim 19, further comprising a fifth probability calculator, wherein said fifth probability calculator calculates said probability based on said second language model, if said preceding word has been judged as not being a disfluency word by said third judging processor.

Claims 23-25 canceled.

(Note: claims 23-25 are shown for the convenience of the Examiner so that the Examiner can be assured that correct claim dependencies have been maintained for claims 26-34)

23. (Canceled) A method for recognizing speech from texts comprising disfluency words and non-disfluency words, comprising the steps of:

(a) judging whether words inputted as an object of recognition are non-disfluency words;

(b) judging further whether said words constituting a condition necessary for recognizing said input words consist only of non-disfluency words, if said inputted words have been judged to be non-disfluency words in said step (a); and

(c) calculating a probability, if said conditional words have been judged as comprising non-disfluency words and disfluency words in said step (b), by using a dictionary containing a first language model which has been trained regarding disfluency words and non-disfluency words, and a second language model which has been trained regarding non-disfluency words and trained to ignore disfluency words so as to recognize words showing the highest probability of representing said input words.

Appln. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

24. (Canceled) The method for speech recognition according to claim 23, further comprising the step of:

calculating said probability based on said first language model, if said object words have been judged as not being non-disfluency words in said step (a).

25. (Canceled) The method for speech recognition according to claim 23, further comprising the step of:

calculating said probability based on said second language model, if said conditional words have been judged as consisting only of non-disfluency words in said step (b).

26. (Currently Amended) ~~The method for speech recognition according to claim 24, further comprising the step of:~~

A method for recognizing speech from texts comprising disfluency words and non-disfluency words, comprising the steps of:

(a) judging whether words inputted as an object of recognition are non-disfluency words;

(b) judging further whether said words constituting a condition necessary for recognizing said input words consist only of non-disfluency words, if said inputted words have been judged to be non-disfluency words in said step (a);

(c) calculating a probability, if said conditional words have been judged as comprising non-disfluency words and disfluency words in said step (b), by using a dictionary containing a first language model which has been trained regarding disfluency words and non-disfluency words, and a second language model which has been trained regarding non-disfluency words and trained to ignore disfluency words so as to recognize words showing the highest probability of representing said input words;

calculating said probability based on said first language model, if said object words have been judged as not being non-disfluency words in said step (a); and

calculating said probability based on said second language model, if said conditional words have been judged as consisting only of non-disfluency words in said step (c).

Appln. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

27. (Currently Amended) ~~The method for speech recognition according to claim 23, said step (c) further comprising the steps of:~~

A method for recognizing speech from texts comprising disfluency words and non-disfluency words, comprising the steps of:

(a) judging whether words inputted as an object of recognition are non-disfluency words;

(b) judging further whether said words constituting a condition necessary for recognizing said input words consist only of non-disfluency words, if said inputted words have been judged to be non-disfluency words in said step (a);

(c) calculating a probability, if said conditional words have been judged as comprising non-disfluency words and disfluency words in said step (b), by using a dictionary containing a first language model which has been trained regarding disfluency words and non-disfluency words, and a second language model which has been trained regarding non-disfluency words and trained to ignore disfluency words so as to recognize words showing the highest probability of representing said input words;

(d) judging whether a word immediately preceding said object word is a disfluency word; and

calculating said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word in said step (d).

28. (Currently Amended) ~~The method for speech recognition according to claim 24-27, said step (c) further comprising the steps of:~~

calculating said probability based on said first language model, if said object words have been judged as not being non-disfluency words in said step (a).

(d) judging whether a word immediately preceding said object word is a disfluency word; and

calculating said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word in said step (d).

Appl. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

29. (Currently Amended) The method for speech recognition according to claim ~~25-28~~, said step (c) further comprising the steps of:

calculating said probability based on said second language model, if said conditional words have been judged as consisting only of non-disfluency words in said step (b).

~~(d) judging whether a word immediately preceding said object word is a disfluency word; and~~

~~calculating said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word in said step (d).~~

30. (Original) The method for speech recognition according to claim 26, said step (c) further comprising the steps of:

(d) judging whether a word immediately preceding said object word is a disfluency word; and

calculating said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word in said step (d).

31. (Original) The method for speech recognition according to claim 27, further comprising the step of:

calculating said probability based on said second language model, if said preceding word has been judged as not being a disfluency word in said step (d).

32. (Original) The method for speech recognition according to claim 28, further comprising the step of:

calculating said probability based on said second language model, if said preceding word has been judged as not being a disfluency word in said step (d).

33. (Original) The method for speech recognition according to claim 29, further comprising the step of:

Appln. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

calculating said probability based on said second language model, if said preceding word has been judged as not being a disfluency word in said step (d).

34. (Original) The method for speech recognition according to claim 30, further comprising the step of:

calculating said probability based on said second language model, if said preceding word has been judged as not being a disfluency word in said step (d).

Claims 35-37 canceled.

(Note: claims 35-37 are shown for the convenience of the Examiner so that the Examiner can be assured that correct claim dependencies have been maintained for claims 38-46)

35. (Canceled) A storage medium readable by a computer containing a computer program to recognize speech from texts comprising disfluency words and non-disfluency words, said computer program being designed to make the computer perform the following steps:

(a) judging whether words inputted as an object of recognition are non-disfluency words;

(b) judging further whether said words constituting a condition necessary for recognizing said inputted words consist only of non-disfluency words, if the inputted words have been judged to be non-disfluency words in said step (a); and

(c) calculating a probability, if said conditional words have been judged as comprising non-disfluency words and disfluency words in said step (b), by using a dictionary containing a first language model which has been trained regarding disfluency words and non-disfluency words and a second language model which has been trained regarding non-disfluency words and trained to ignore disfluency words so as to recognize words showing the highest probability of representing said inputted words.

Appln. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

36. (Canceled) The storage medium according to claim 35, wherein said computer program is designed to make the computer execute the additional step of:

calculating said probability based on said first language model, if said object words have been judged as not being non-disfluency words in said step (a).

37. (Canceled) The storage medium according to claim 35, wherein said computer program is designed to make the computer execute the additional step of:

calculating said probability based on said second language model, if said conditional words have been judged as consisting only of non-disfluency words in said step (b).

38. (Currently Amended) ~~The storage medium according to claim 36, wherein said computer program is designed to make the computer execute the additional step of:~~

A storage medium readable by a computer containing a computer program to recognize speech from texts comprising disfluency words and non-disfluency words, said computer program being designed to make the computer perform the following steps:

(a) judging whether words inputted as an object of recognition are non-disfluency words;

(b) judging further whether said words constituting a condition necessary for recognizing said inputted words consist only of non-disfluency words, if the inputted words have been judged to be non-disfluency words in said step (a);

(c) calculating a probability, if said conditional words have been judged as comprising non-disfluency words and disfluency words in said step (b), by using a dictionary containing a first language model which has been trained regarding disfluency words and non-disfluency words and a second language model which has been trained regarding non-disfluency words and trained to ignore disfluency words so as to recognize words showing the highest probability of representing said inputted words;

calculating said probability based on said first language model, if said object words have been judged as not being non-disfluency words in said step (a); and

Appl. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

calculating said probability based on said second language model, if said conditional words have been judged as consisting only of non-disfluency words in said step (b).

39. (Currently Amended) ~~The storage medium according to claim 35, wherein said computer program is designed to make the computer execute the additional steps of:~~

A storage medium readable by a computer containing a computer program to recognize speech from texts comprising disfluency words and non-disfluency words, said computer program being designed to make the computer perform the following steps:

(a) judging whether words inputted as an object of recognition are non-disfluency words;

(b) judging further whether said words constituting a condition necessary for recognizing said inputted words consist only of non-disfluency words, if the inputted words have been judged to be non-disfluency words in said step (a);

(c) calculating a probability, if said conditional words have been judged as comprising non-disfluency words and disfluency words in said step (b), by using a dictionary containing a first language model which has been trained regarding disfluency words and non-disfluency words and a second language model which has been trained regarding non-disfluency words and trained to ignore disfluency words so as to recognize words showing the highest probability of representing said inputted words;

(d) judging whether a word immediately preceding said object word is a disfluency word; and

calculating said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word in said step (d).

40. (Original) The storage medium according to claim 36-39, wherein said computer program is designed to make the computer execute the additional steps of:

calculating said probability based on said first language model, if said object words have been judged as not being non-disfluency words in said step (a).

Appln. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6165-169

IBM Docket No. JA9-1999-0251US1

~~— (d) judging whether a word immediately preceding said object word is a disfluency word; and~~

~~— calculating said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word in said step (d).~~

41. (Currently Amended) The storage medium according to claim ~~37~~ 40, wherein said computer program is designed to make the computer execute the additional steps of:

calculating said probability based on said second language model, if said conditional words have been judged as consisting only of non-disfluency words in said step (b).

~~(d) judging whether a word immediately preceding said object word is a disfluency word; and~~

~~calculating said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word in said step (d).~~

42. (Original) The storage medium according to claim 38, wherein said computer program is designed to make the computer execute the additional steps of:

(d) judging whether a word immediately preceding said object word is a disfluency word; and

calculating said probability based on said first and said second language models, if said preceding word has been judged to be a disfluency word in said step (d).

43. (Original) The storage medium according to claim 39, wherein said computer program is designed to make the computer execute the additional step of:

calculating said probability based on said second language model, if said preceding word has been judged as not being a disfluency word in said step (d).

44. (Original) The storage medium according to claim 40, wherein said computer program is designed to make the computer execute the additional step of:

Appln. No. 09/748,542
Amendment dated Aug. 27, 2004
Reply to Office action of May 28, 2004
Docket No. 6169-169

IBM Docket No. JA9-1999-0251US1

calculating said probability based on said second language model, if said preceding word has been judged as not being a disfluency word in said step (d).

45. (Original) The storage medium according to claim 41, wherein said computer program is designed to make the computer execute the additional step of:

calculating said probability based on said second language model, if said preceding word has been judged as not being a disfluency word in said step (d).

46. (Original) The storage medium according to claim 42, wherein said computer program is designed to make the computer execute the additional step of:

calculating said probability based on said second language model, if said preceding word has been judged as not being a disfluency word in said step (d).

Claims 47-38 canceled.